

What is claimed is:

1. A method for detecting gold in at least one ore sample, comprising:
 - 5 a) obtaining an ore sample suspected of containing gold;
 - b) contacting a surface of said ore sample with a gold-specific protein; and
 - c) detecting the presence of the gold-specific protein on said surface of said ore sample;whereby gold may be detected.
- 10 2. The method of claim 1, further comprising quantitating the gold that is detected.
3. A method for detecting gold in at least one ore sample, comprising:
 - a) obtaining an ore sample suspected of containing gold;
 - b) contacting a surface of said ore sample with a gold-specific protein;
 - c) contacting said surface with a proteolytic agent to proteolyze said gold-specific
 - 15 protein into a proteolytic fragment; and
 - d) detecting said proteolytic fragment;whereby gold may be detected.
4. The method of claim 3, wherein the gold-specific protein is GBP.
5. The method of claim 3, wherein the proteolytic agent is trypsin.
- 20 6. The method of claim 3, wherein said proteolytic fragment is the alkaline phosphatase domain of GBP.
7. The method of claim 3, wherein the method is performed in a multiwell plate.
8. The method of claim 7, wherein the detection comprises luminescent detection.
9. The method of claim 8, wherein the detection comprises exposure of the
- 25 multiwell plate to light-sensitive film.
10. The method of claim 3, wherein the detection is quantitative.

11. The method of claim 8, wherein the detection is quantitative.

12. A method for extracting gold from a mineral suspension, comprising:

a) obtaining a sample of a processing solution suspected of containing gold and magnetite;

5 b) contacting said sample with a magnetic mineral binding reagent comprising a gold-specific protein to form a magnetic mineral binding reagent:gold complex; and

c) applying a magnetic field to said sample;
whereby gold may be extracted.

13. A method for extracting gold from a mineral suspension, comprising

10 a) obtaining a sample of a processing solution suspected of containing gold;

b) contacting said sample with a hydrophobic reagent comprising a gold-specific protein to form a hydrophobic reagent:gold complex;

c) adding a flotation reagent to said sample;

d) agitating said sample;

15 whereby gold may be extracted.